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Ensuring a Safe and Reliable Water Supply through Conservation and Efficiency Improvements

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Scientific evidence indicates that the health of the Sacramento-San Joaquin Delta is unstable and rapidly deteriorating. The quantity and quality of water in the Delta ultimately affect the Delta's ecosystem health. These issues are intricately linked, although we rarely treat them as such. We know that the physical barriers and huge pumps that export water to farms and cities in the south radically change flows in the Delta, affecting water quality, water temperatures, and access to habitat vital for fish survival. Upstream diversions also affect the Delta's health. While some of the water diverted upstream is ultimately returned to the Delta, this water is often of lesser quality, containing pesticides, fertilizers, and salts.

There is no single solution to the problems that plague the Delta. The problems and solutions are numerous. A key finding of the Delta Vision Blue Ribbon Task Force is that a "revitalized Delta ecosystem will require reduced diversions—or changes in patterns and timing of those diversions upstream, within the Delta, and exported from the Delta—at critical times." Conservation and efficiency improvements, along with a greater emphasis on developing local resources, will allow us to reduce water withdrawals from the Sacramento-San Joaquin Delta, while ***increasing*** the reliability and quality of those withdrawals.

Californians Have Made Great Progress in Improving Water Use Efficiency

Since the last major drought ended in 1992, California has made great strides in reducing water waste — **total water use in California was less in 2001 than it was in 1975, yet population increased by 60% and gross state product increased 2.5 times** (Figure 1).

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In 1975, we produced only $3 in goods and services for every 100 gallons of water we used. Today we produce $9 for every 100 gallons used, in constant dollars (Figure 2). Forty years ago we used nearly 2000 gallons for every person in the state every day. Today we use half that amount (Figure 3). **We have broken the link between growing water use, population, and economic well-being.** This has been achieved in part by improvements in conservation and efficiency, as well as the changing nature of our economy.

Despite Recent Efficiency Improvements, Current Water Use Remains Wasteful

While Californians are using water more efficiently than before, consistent wet weather over the past decade has spawned complacency among water managers and California residents. Water waste, both inside and outside our homes and businesses, remains pervasive. We've installed vast expanses of lawn in hot, dry environments with very limited water supplies. In some regions of California, up to 80% of household water used is applied to lawns and other inappropriate landscapes. We waste water indoors as well. While all new and remodeled homes feature efficient toilets, showerheads, and kitchen fixtures, millions of residents still use old, inefficient water-wasting appliances.

Significant savings can be found in nearly all residents and businesses. Front-loading washing machines, for example, use 40% less water than their top-loading counterparts—saving the consumer money through lower water, wastewater, and energy bills. New toilets use a quarter of the water used by old models. The Pacific Institute's 2003 report, "Waste Not, Want Not," found that **existing, cost-effective technologies and policies can reduce current (2000) urban demand by more than 30%, an annual savings of more than 2.3 million acre-feet.** This estimate was recently adopted by the Department of Water Resources in the 2005 California Water Plan Update.

Substantial savings are available from the agricultural sector as well. Studies have shown that installing efficient irrigation technologies, such as drip systems, can reduce water use and increase agricultural yield. **Yet, 30% of all vineyards have still not installed drip systems and nearly 80% of all vegetables are still grown with flood or sprinkler**

irrigation. Given that the agricultural sector uses about 80% of California's water supply, or about 34 million acre-feet annually, even small efficiency improvements can produce tremendous water savings. Additional water savings are possible if farmers continue the trend of moving away from water-intensive crops like cotton, pasture, rice, and alfalfa in favor of more valuable low-water crops like vegetables, fruits, and nuts.

Research shows that significant water savings can be found for much less than the cost of building new supply or expanding our current supply. These savings are real and represent a tremendous amount of untapped potential in California's urban and agricultural sectors. This suggests that improved efficiency and conservation are the cheapest, easiest, and least destructive ways to meet California's water supply needs. In addition, water conservation and efficiency has the additional benefit of producing significant energy savings.

Recommendations

Action, on the part of legislators, water managers, water districts and agencies, farmers, corporations, and all individuals, is needed to realize the goal of an efficient future. The recommendations below provide an indication of the wide array of options available to begin working toward a more efficient future.

Create a statewide system of water data monitoring and exchange, especially for water use.

- Collect and make publicly available comprehensive water-use data for all users.
- Design and implement comprehensive local groundwater monitoring and management programs statewide.

Eliminate pricing policies that subsidize the inefficient use of water.

- Ensure that urban and agricultural water rates reflect the true cost of service, including non-market costs.

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- Phase out water subsidies on the Central Valley Project, especially for low-valued, water-intensive crops.

- Implement new rate structures that encourage efficient use of water.

Increase efforts to promote the use of water-efficient technologies and practices in both the urban and agricultural sectors.

- Set new water-efficiency standards for residential and commercial appliances, including toilets, washing machines, dishwashers, showers, and faucets.

- Offer comprehensive rebates, including both energy and water rebates, for the purchase of water-efficient appliances.

- Require water-efficient appliances to be "retrofit-on-resale" for existing homes.

- Revise and expand "Best Management Practices" for urban and agricultural water agencies.

- Make "Best Management Practices" mandatory and enforceable.

- Expand the development and deployment of efficient irrigation technologies and less water-intensive crop types.

Provide legislative, regulatory, and administrative support to those water transfers that improve water-use efficiency, and promote the overall well-being of rural communities.

- Implement programs that permit water saved through efficiency improvements to be transferred and marketed, while reducing the adverse impacts on rural communities and the environment created by such transfers.

Expand educational programs on water use, and on the potential for water-use efficiency.

- Expand water-efficiency information and evaluation programs in the Agricultural Extension Services and other agricultural outreach efforts.

- Develop on-line data collection and dissemination networks to provide farmers with immediate meteorological and hydrological information on climate, soil conditions, and crop water needs.

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Combine land planning more extensively with water planning.

- Demonstrate a secure, permanent supply of water before new urban and suburban developments are approved. The first steps in this direction were recently taken, but should be expanded.

- Demonstrate housing designs are water-efficient before developments are approved.

- Protect high-quality agricultural land and related watersheds from urbanization.

Conclusion

Continued population and economic growth, climate change, and environmental concerns are placing additional strains on the state's limited water resources Although Californians have improved efficiency of our water use over the past 30 years, existing, cost-effective technologies and policies can reduce urban and agricultural demand significantly, thereby helping to ensure that a safe and reliable supply is available for decades to come. Action, on the part of legislators, water managers, water districts and agencies, farmers, corporations, and all individuals, is required to realize the goal of an efficient future.

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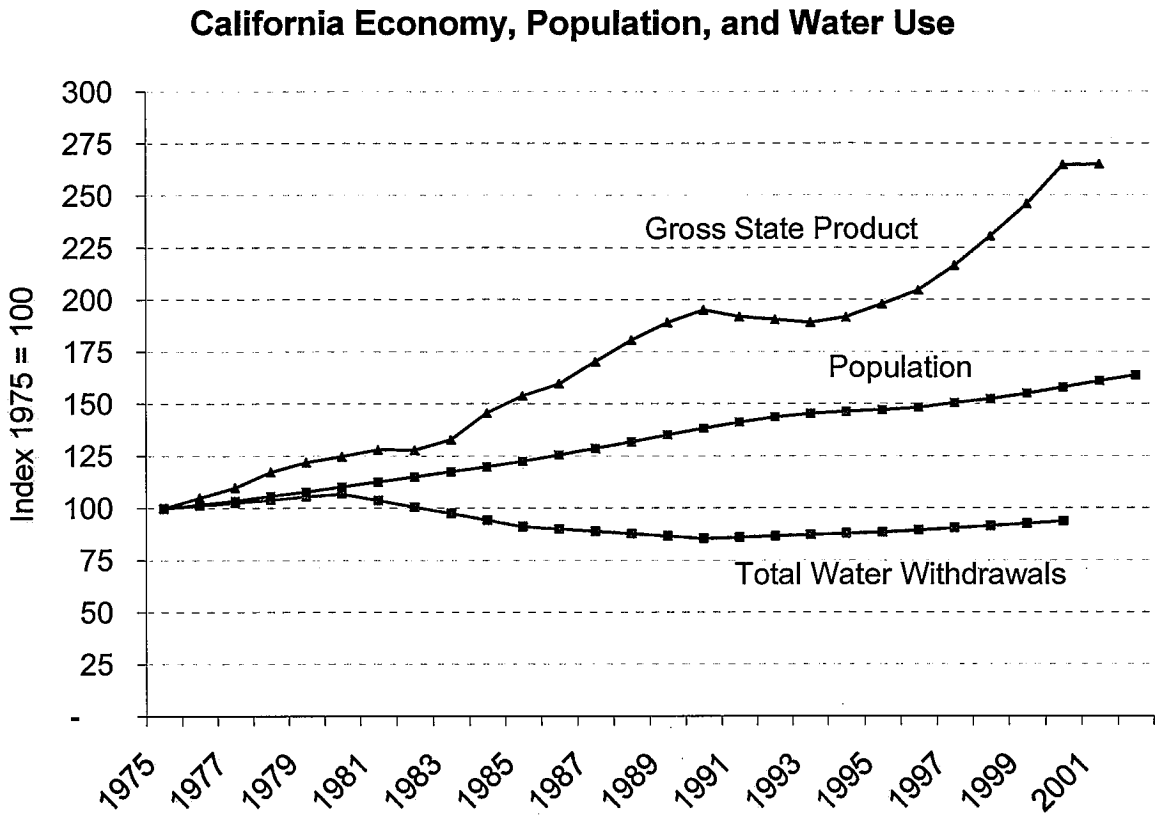

Figure 1. California's water use (green line), population (red line), and gross state product (blue line) between 1975 and 2001. Data are indexed to 1975. Note that GSP has gone up more than 2.5 times, while water use has actually declined. Water use from the U.S. Geological Survey. Analysis by the Pacific Institute.

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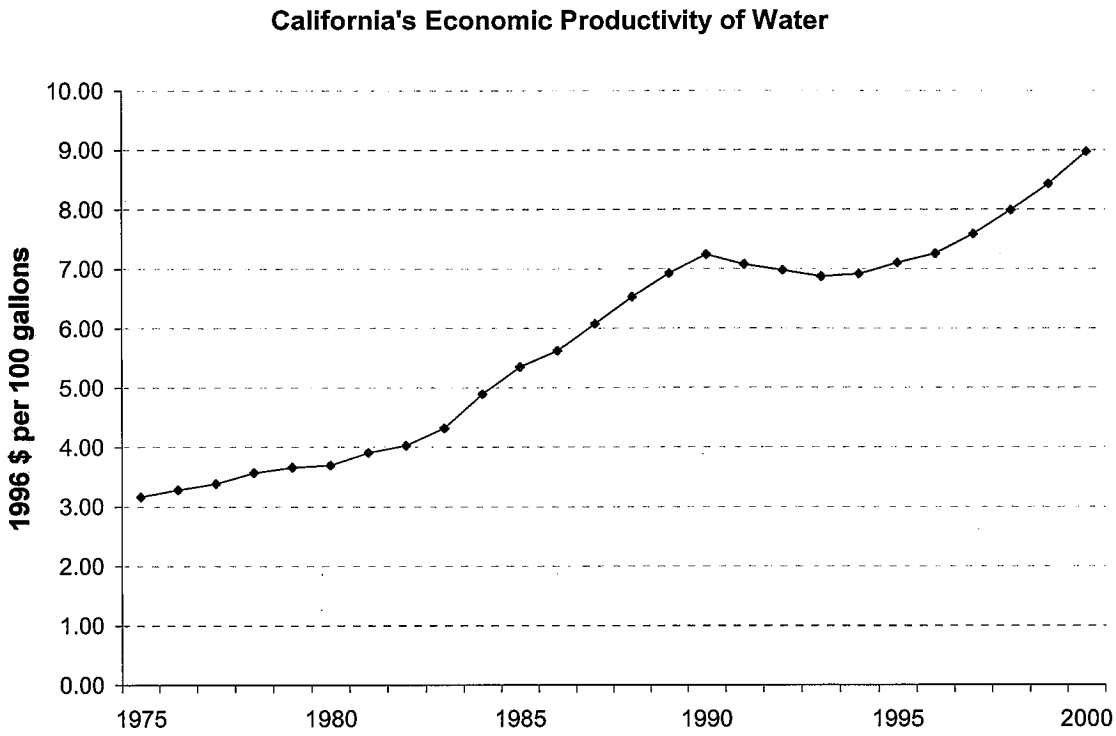

Figure 2. California's "economic productivity of water" showing that the state now produces nearly $9 of goods and services for every 100 gallons of water used, compared to $3 per 100 gallons in 1975 (in constant dollars). Analysis from the Pacific Institute.

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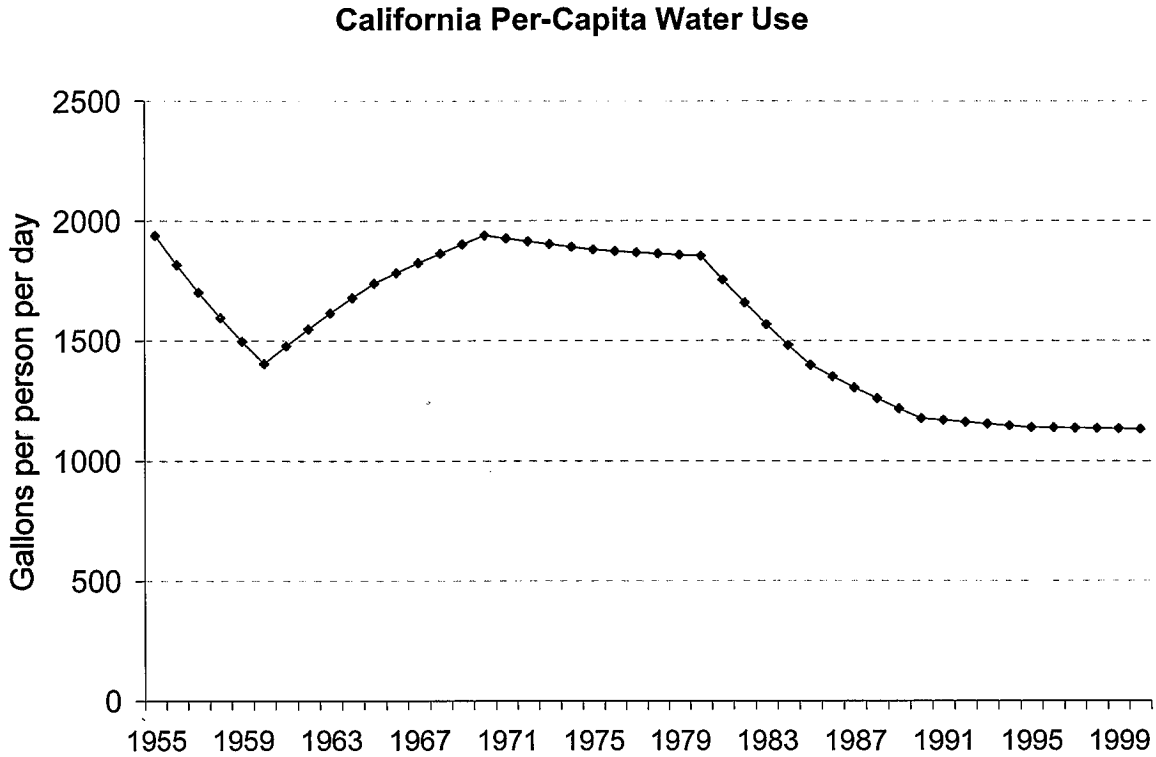

Figure 3. Water use per person in California. Note that water use per person has dropped by nearly 50% over the past 40 years as conservation and efficiency, and changes in California's economy, have improved productivity.

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